AMENDMENTS TO THE SPECIFICATION

Please amend the specification as follows:

[0002]   Crosstalk is an omnipresent phenomenon in high frequency circuits. The existence of crosstalk in high frequency circuits induces unexpected erroneous signals from a driven signal trace to a victim signal trace, ~~which~~ the crosstalk screws up the original signals intended to be sent on the victim signal trace. For this reason, efforts have been devoted to develop means for eliminating such unwanted crosstalk phenomena.

[0003]   As shown in FIG. 1, suppose that the first differential pair 120 is a driven pair and the second differential pair 130 is a victim pair, the crosstalk on the second differential pair 130 due to the first differential pair 120 is equal to the sum of the crosstalk induced on the third signal trace 131 and on the fourth signal trace 132. The crosstalk induced on the third signal trace 131 and on the fourth signal trace 132 are equal to the sum of crosstalk due to the first signal trace 121 and the second signal trace 122. One may denote the crosstalk on the third signal trace 131 due to the first signal trace 121 by X31, the crosstalk on the third signal trace 131 due to the second trace 122 by X32, the crosstalk on the fourth signal trace 132 due to the first signal trace 131 by X41, and the crosstalk on the fourth signal trace 132 due to the second signal trace 132 by X42. Since crosstalk is primarily induced at the rise time or the fall time of a signal, if a positive crosstalk is induced at the rise time, a negative crosstalk is then induced at the fall time. Therefore, the total crosstalk induced on the second differential pair 130 due to the first differential pair 120 is equal to (X31-X32)-(X41-X42). Since the spacing between the third signal trace 131 and the first signal trace 121 is equal to the spacing between the fourth signal trace 132 and the second signal trace 122, X31 equals X42. Consequently, the total crosstalk induced on the second differential pair 130 due to the first differential pair 120 is equal to (2*X31-X32-X41). In order to make this resultant total crosstalk negligible, one ~~way needs~~ way is to increase the spacing between the first differential pair 120 and the second differential pair 130, leaving X31 approaching X32 and X41 approaching X31 (or X42). By doing so, large real estate of a printed

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circuit board is required, which ~~enormously~~ greatly limits the integration of signal traces on a printed circuit board. Alternatively, the other way ~~may need~~ is to set the second differential pair at another layer of the printed circuit board and electrically isolated from the first differential pair. [[b]]

[0027] Referring to FIG. 8, wherein an arrangement of differential pairs in a multi-layer printed circuit board 800, in accordance with the seventh particular embodiment of the present invention, is illustrated. The multi-layer printed circuit board 800 comprises a dielectric material 810 with a dielectric constant .epsilon.7, a first differential pair 820, a second differential pair 830, a first ground plane 840 and a second ground plane 850. The first differential pair 820 further comprises a first signal trace 821 and a second signal trace 822, while the second differential pair 830 further comprises a third signal trace 831 and a fourth signal trace 832. The first differential pair 820 and the first ground plane 840 are disposed on the dielectric material 810, while the second differential pair 830 and the second ground plane 850 are disposed in one layer of the dielectric material 810. As shown, the first ground plane 840 is substantially above the second differential pair 830, while the second ground plane 850 is substantially below the first differential pair 820. Since the spacing between the first signal trace 821 and the second differential pair 830 and the spacing between the fourth signal trace 832 and the first differential pair 820 are far enough apart, the crosstalk on the first differential pair 820 induced by the fourth signal trace 832 and the crosstalk on the second differential pair 830 induced by the first signal trace 821 are negligible. As a result, only the crosstalk on the second signal trace 822 induced by the third signal trace 831, and vice versa, is significant. However, the presence of the first ground plane 840 and the second ground plane 850 shields or absorbs most of the crosstalk between the second signal trace 822 and the third signal trace 831, leaving only a very small "aperture" for inducing crosstalk between the first differential pair 820 and the second differential pair 830, the resultant crosstalk on the first differential pair 820 induced by the second differential pair 830, and vice versa, is thus negligible.

[0028] Referring to FIG. 9, wherein an arrangement of differential pairs in a multi-layer printed circuit board 900, in accordance with the eighth particular embodiment of the present invention, is illustrated. The multi-layer printed circuit board 900 comprises a dielectric material 910 with a dielectric constant .epsilon.8,

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a first differential pair 920, a second differential pair 930, a first ground plane 940, a second ground plane 950 and a third ground plane 960. The first differential pair 920 further comprises a first signal trace 921 and a second signal trace 922, while the second differential pair 930 further comprises a third signal trace 931 and a fourth signal trace 932. The first differential pair 920, the first ground plane 940 and the second ground plane 950 are disposed on the dielectric material 910, while the second differential pair 930 and the third ground plane 950 are disposed in one layer of the dielectric material 910. As shown, the third ground plane 950 is disposed between the third signal trace 931 and the fourth signal trace 932. Also, the third signal trace 931 is substantially below the first ground plane 940, while the fourth signal trace 932 is substantially below the second ground plane 950. Since the spacing between the first signal trace 921 and the fourth signal trace 932 and the spacing between the second signal trace 922 and the third signal trace 931 are far enough apart, the crosstalk on the first signal trace 921 induced by the fourth signal trace 932 and the crosstalk on the second signal trace 922 induced by the third signal trace 931 are negligible. As a result, only the crosstalk on the first signal trace 921 induced by the third signal trace 931, and vice versa, and on the second signal trace 922 induced by the fourth signal trace 932, and vice versa, are significant. However, the presence of the first ground plane 940, the second ground plane 950 and the third ground plane 960 shields or absorbs most of the crosstalk between the first signal trace 921 and the third signal trace 931, and between the second signal trace 922 and the fourth signal trace 932, leaving only a very small "aperture" for inducing crosstalk between the first signal trace 921 and the third signal trace 931, and between the second signal trace 922 and the fourth signal trace 932, the resultant crosstalk on the first differential pair 920 induced by the second differential pair 930, and vice versa, is thus negligible.

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